Space Weather Forecast

Issued on Friday, 05 January 2024 at 01:29 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

Space Weather Forecast Headline: Chance of Moderate flares with a slight chance of isolated Strong flares. Minor Proton Storming continues, reducing risk through today.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Activity has been Moderate with a single moderate-class flare observed at 04/0155 UTC from the complex spot in the northeast. There are seven sunspot regions on the disc, of which four are numbered. The most notable group remains the aforementioned spot in the northeast, which was the source of a strong flare on 31 Dec, and is magnetically complex. The remaining spots are all smaller and simpler at this time, with the emergence of a new region in the northeast.

A number of coronal mass ejections were visible in imagery, however these have all been assessed as being off the Earth-Sun line with no Earth-directed coronal mass ejection occurring.

Solar Wind / Geomagnetic: Solar winds were indicative of a residual influence of a previous enhanced solar wind . Speeds were initially around 480 km/s before gradually falling to near 400 km/s. The strength of the solar winds magnetic field remained weak. The important north-south component varied weakly throughout, becoming predominantly southward later in the period. Geomagnetic activity was Quiet.

Energetic Particles / Solar Radiation: Count rate of energetic particles (high energy protons) has remained above the Minor Storm threshold since 03/2005 UTC.

Four-Day Space Weather Forecast Summary

Solar Activity: Generally moderate activity is considered likely, with isolated Moderate-class flares and a slight chance of a Strong-class flare.

Solar Wind / Geomagnetic Activity: No coronal mass ejections feature in the forecast period. The current slightly elevated solar wind speeds, due to the residual influence from a previous coronal hole, are expected to continue to wane. The solar winds may decrease to background levels today and tomorrow (5-6th Jan). The next expected enhancement in solar winds is from the high speed stream of coronal hole 89/-, which may begin to arrive from late tomorrow but more likely through day 3 (7th Jan), with wind speeds of 450-500 km/s.

Predominantly Quiet geomagnetic activity is initially expected, with a chance of Unsettled periods. From late tomorrow (6th Jan) and through day 3 (7th Jan) there is an increasing chance of Unsettled or Active periods and a slight chance of isolated Minor Storm intervals upon the arrival of the next coronal hole enhancement.

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 330 135 4254 Email: moswoc@metoffice.gov.uk

© Crown Copyright 2024. All Rights Reserved.

Met Office Space Weather Forecast

Energetic Particles / Solar Radiation: GOES16 high energy proton flux is currently above the Minor Storm threshold in response to recent significant flare activity. Proton flux levels are expected to continue to exceed Minor storm levels at first today, but then decreasing below through today. However, there is a chance of further Minor storm events on subsequent days, depending on any notable flares occurring.

Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	1	1	10	5
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	Yes	40	40	40	4
Very Active	R3 to R5 X	No	10	10	10	10

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	Yes	100	50	30	20
Very Active	≥ S3 *	No	1	1	1	1
* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)						

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 330 135 4254 Email: moswoc@metoffice.gov.uk

© Crown Copyright 2024. All Rights Reserved.